Tower climbing safety and rescue

Safety is an obligation of all parties associated with the installation and maintenance of communications towers. The government has explained what will be done and how. Communications professionals must now use the proper equipment, techniques and training to meet compliance.

by Winton Wilcox Jr.

The individuals who build and maintain wireless communications systems operate in one of the most hostile environments of any workplace. These professionals hang like spiders, often hundreds of feet in the air, while skillfully mounting, adjusting and repairing transmitting and receiving equipment. Our systems require the skills of these special technicians, and their lives depend on our help. Whether you are a climber, an employer or a climber subcontractor, you are responsible for safety.

Imagine climbing a 20-story-high ladder (200 feet), then "scootching" (straddling the pipe or beam and sliding) several feet from the ladder to the mounting location for the antenna. This crossing is most often done on a tower member that is only a few inches in diameter. Following the "tight rope" act to reach the face of the structure, you now crawl out farther (the stand-off distance) and then hang in midair and fasten an antenna or panel to a small bracket or pipe. One slip, one error, and the climber falls 200 feet to the ground.

Valiant tower workers develop an insider, "macho" attitude. Managers, owners and non-climbers respond by adopting a hands-off approach to these hazards, and the government steps in to protect the workers. Today, there is a lot that can be done to guard climbers from fall hazards. To guarantee that climbers are safer, the Occupational Safety and Health Administration (OSHA) has clearly explained what will be done and how. Communications professionals must now acquire the appropriate equipment, develop the techniques and implement the training to comply with the law.

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Different situations, different solutions

Providing appropriate and legal solutions to your climbers' safety is a significant task. You cannot simply buy the solution. Effective implementation of fall protection may take you several months. "You can't implement the solutions sitting in your New Jersey office," said Barry Ferguson, a safety consultant for AT&T and a member of the National Association of Tower Erectors' (NATE) OSHA relations committee. When charged with AT&T's compliance to the regulations, Ferguson spent hundreds of hours visiting towers, consulting with tower workers and evaluating potential equipment. Although Ferguson has many years' experience working with OSHA and safety programs on a large scale, he said he was amazed at the complexity of this problem. Initially addressing ladder safety issues, progressing to personal fall arrest systems and then resolving the rescue requirements became a major project.

The Tower Climbing Safety Program at AT&T includes equipment supplied by four vendors. Training is an intensive two-day program for climbers that includes both classroom and field practice activities. Certified climbers must pass a written examination and physically demonstrate proper use of all equipment and techniques. While this climbing safety program is excellent for structures and work performed by the AT&T workers, it is not a universal solution to tower climbing safety. You must develop your own policies and programs for climbing safety.

Development of your fall-safety program requires thoroughly understanding the fall hazards that you, your climbers or

your subcontractors will face. Hazards depend on the types of structures, the climbing devices used, the tasks being performed and the equipment being used. The task of mounting a transmission line to the inside leg of a water tower requires different equipment than the task of mounting a cellular antenna panel on a monopole. Crossing the large, open face of a self-supporting tower presents different fall protection problems than crossing a small, guyed-tower face. Climbing pegs or step bolts suggest different problems than climbing a fixed ladder. Once you have a clear understanding of the fall hazards in your particular environment, you are ready to look for solutions. These solutions begin with equipment.

Fall protection equipment

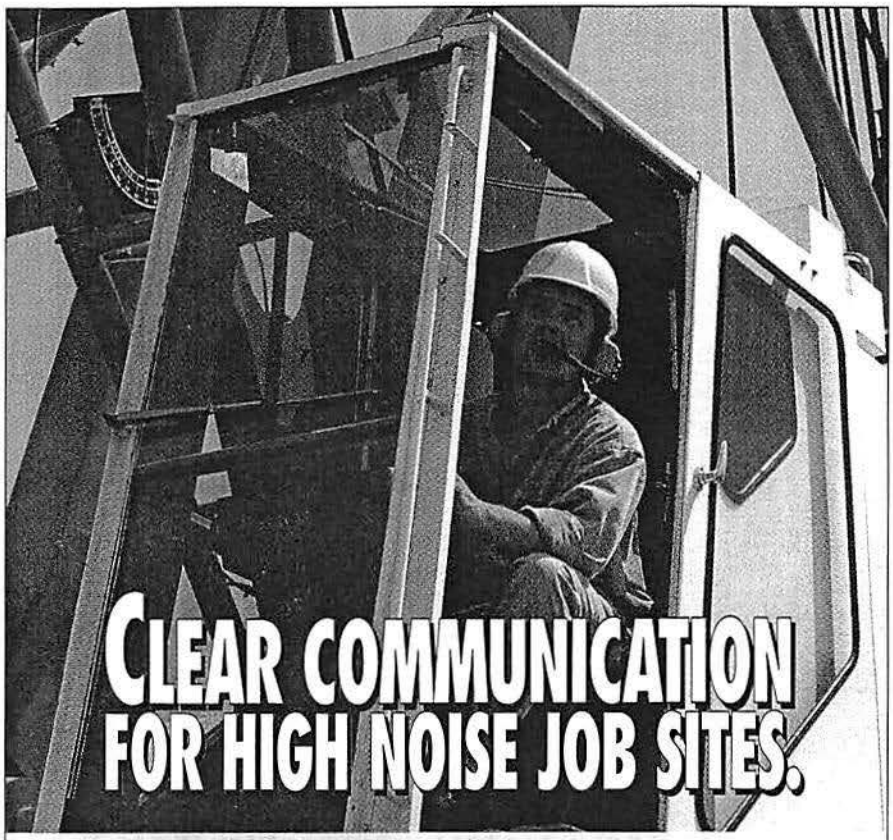
For nearly eight years, OSHA, employers and manufacturers have argued, examined and developed answers to the need for fall protection. There are hundreds of products to address the problems. Unfortunately, these products are predominantly directed at larger markets rather than at the highly specialized world of communications tower workers. There are more customers in the roofing industry, in the general contractor construction industry and even in the window-washing industry than in tower climbing. It is natural for manufacturers to concentrate on products that can be sold to a larger market. The lack of standards in tower construction, tower erection, tower maintenance and tower use accents the problem of developing universal solutions to tower-climbing safety. Because there is no standard "tower," there is no universal equipment to address the fall hazards that climbers face. Recognizing this diversity requires that you consider your climbers' work and acquire component equipment. When working, it is the responsibility of the climber to use the components to address the specific task and environment confronted. You must provide the climber with the component equipment and training sufficient to adapt the components to the environment.

Components of your fall safety equipment and procedures may include temporary or permanent horizontal and vertical life lines, rope and cable grabs, ladder climbing devices, full-body harnesses (body belts will not be legal much longer), self-retracting lanyards, positioning lanyards, shock-absorbing lanyards, special connecting hardware, suspension equipment and multiple rescue equipment.

If any of these components is unfamiliar, there are several sources of information. OSHA has carefully and clearly defined the components in the standards. You can find definitions and clarifications in OSHA standards 1910.66, 1915 SubPart I App A, 1926.500 and others. You will find that manufacturers have a wealth of information on the subject. Consult suppliers of safety equipment. Check with NATE. NATE continues to work with OSHA to refine training and certification issues in fall safety and is an excellent source of information and references on the subject. Special consultants, such as our company, and trade associations will readily provide you with contact information for manufacturers, state and federal OSHA services and other companies who have similar problems.

Fall restraint and fall arrest

Keep in mind that fall protection encompasses two major elements. These are *fall restraint* and *fall arrest*. Fall restraint is a method of preventing the climber from



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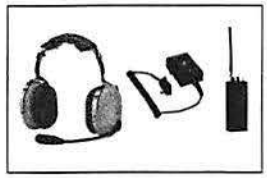

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getting into a fall hazard. This is nearly impossible in the world of tower climbers. The only methods of preventing a fall hazard on a communications tower (ignoring the obvious solution of not climbing in the first place) are platforms and (with a little stretch of the definition) the use of positioning lanyards. Few towers have adequate platforms in the work area.

Fall arrest addresses the need to stop a fall, once one occurs, with minimal damage to the climber who has fallen. If we reject the use of nets (and eliminate fanciful solutions such as wings, parachutes and jet packs), we are left with the conclusion that fall safety (restraint or arrest) requires the worker to be 100% connected to the structure.

Selecting the individual component equipment is also dependent on accepting workable techniques for using the equipment to resolve your specific fall hazards. For example, if you select a single, six-foot-long, shock-absorbing lanyard, you are assuming that the climber has adequate connection to the structure without the need to reconnect. If the climber must move beyond the reach of the connection, the climber will be forced to disconnect the lanyard and reconnect it at another location. During this interval, there is no connection! This means that during the reconnection process there is no fall arrest. There are techniques to overcome this. A climber might have sufficient structure to connect the shock-absorbing lanyard, cross a few feet, then attach with a positioning lanyard. Once restrained by the positioning lanyard, the climber could then disconnect the shock-absorbing lanyard and reconnect to an anchorage point nearer the destination. In this scenario, the climber remains 100% connected. Manufacturers generally depict use of these single fall-arrest lanyards as attaching to a horizontal life line or trolley. The decision to equip climbers with a single shock-absorbing lanyard may direct you to include horizontal life lines as a component of your fall safety equipment.

Training

After identifying the specific fall hazards facing your climbers and selecting the appropriate safety equipment, develop a method of training your climbers. This training will create more questions and problems than you may initially suspect. Because the application of components and techniques will differ in individual applications, you cannot simply teach from a checklist. Climbers must clearly understand the objectives and their responsibilities to apply the tools and techniques to meet these objectives so that they are equipped to handle any situation that may arise. You cannot teach "always do this" or "in this case always do that." Your climbers should understand your policies, the regulations and their individual responsibility. They must also understand the use, care, inspection and maintenance of all safety equipment they will be provided. Climbers should understand the function of each component and its relationship to other components if they are to configure the fall protection equipment to their individual work and environment. Plan and implement the training thoroughly. Set objectives, techniques and measurement of success before beginning the training.

As with equipment selection, there are a number of sources for help with training. Teaching experience is critical to the presentation of training information. Your

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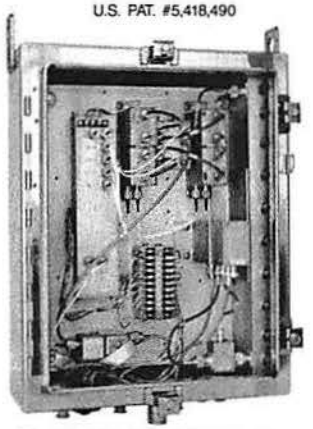

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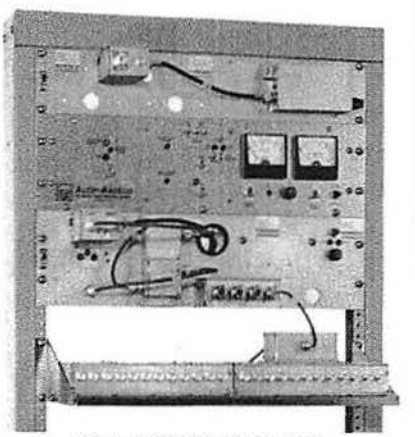

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local junior colleges, high schools and technical centers can provide a lot of help in establishing effective programs. Also, contact your suppliers. Many manufacturers offer training in climbing safety and rescue, or they can recommend specialists who can provide the training. Assuming you cannot locate training appropriate to your particular equipment configuration or policy, you can adapt the instructions that manufacturers must provide with each piece of equipment you purchase. Check with your local or state OSHA offices. Often, there are OSHA services available to help develop safety plans, training programs and documentation. Work with a recognized company that provides consulting, development and training solutions specific to your problem.

Verification

What constitutes proper training? What is a "competent person" in terms of climbing safety? Can you certify the training? Who can certify the training, and how? Unfortunately, there are more arguments and opinions on these questions than there are answers. OSHA is continuing to clarify and define the terms. There are some precautions you can implement to ensure the high quality of your plan and your programs now. Include your fall protection programs in your overall company safety plans. Write them down. You can get a sample safety plan from OSHA if you need a blueprint.

If you work with consultants or accept outside training, be sure the supplier has all the needed insurances and warranties. It is normal to ensure that a provider has workers' compensation insurance, auto insurance and general liability; but remember, if your consultant or provider is delivering training or providing documentation, they should have "errors and omissions" insurance to protect you. One good test of competence and certification is whether the expertise has been accepted as competent by other clients. Always check references.

Your training will be met with resistance by experienced tower climbers. The "ol' timers" will tell you hundreds of reasons why your equipment or techniques will not work. You must be prepared for this conflict. The best preparation is to be thorough in your understanding of what your climbers do, and how they do it, before selecting equipment and developing techniques for fall protection. Recognize that your technicians can surely give you an example of a situation where the equipment or the techniques are more dangerous than "free climbing." Even OSHA has recognized this reality. Ultimately, it is the climber we are working to protect, and it is the climber who must apply the tools and techniques.

Rescue

If you are successful in implementing fall protection, you will inherently create a new safety concern for the climber. The whole concept of fall arrest dictates the necessity of rescuing the worker who has fallen. Without fall arrest, there is rarely a need to "rescue" a fallen worker—just to "replace" him. With fall arrest equipment properly used, a fallen climber can become a helpless victim. Instead of falling 200 feet, as in the opening example, our climber will fall a maximum of 9½ feet and remain suspended nearly 190 feet in the air. This raises a number of questions. How long can the climber remain suspended before the climber begins to suffer? How can you reach the climber

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and get him safely to the ground? Who can rescue the climber? You must address these questions and implement solutions to the problem.

Resolving the requirements to provide a rescue plan requires several considerations. Before you can implement any rescue, you must be aware that a fall has taken place. Timeliness is critical. The tradition of dispatching a technician alone to replace a tower light on his route home is simply not acceptable. A single climber may fall and remain suspended for hours before anyone even knows the fall has occurred. (This is particularly true for a communications tower, which may be situated in a remote site.) If the fall was precipitated by electric shock or a medical condition, the climber may be unconscious and unable to call for aid. Recognizing this concern, many companies have adopted a program of ensuring that a second person is always on-site during a climb. This second person can call 911 in an emergency. Does this resolve the rescue problem? Probably not! Consider our climber at 190 feet. Assume the 200-foot tower is 18 miles out of town, on a hill top and accessed by an unmarked dirt road. Even if the 911 center dispatches a emergency response team qualified to work at these heights and in this environment, how long will it take them to assemble the qualified individuals and respond? Perhaps the fire department has a hook-and-ladder vehicle to effect elevated rescue, but how many communities have the need for rescue ladders that can reach the equivalent of the 20th floor of a building?

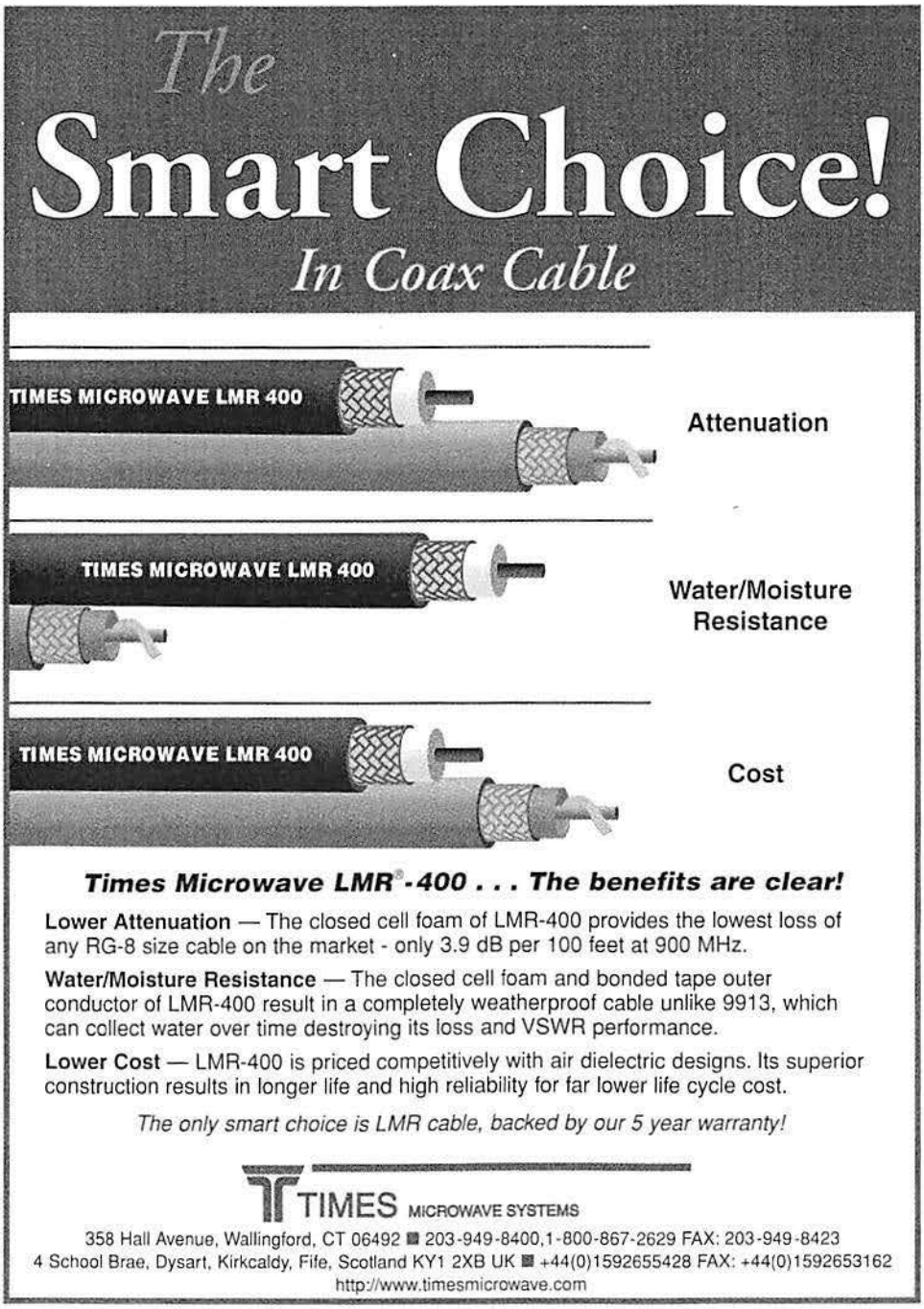
Consider in your plans that the most competent rescue source for a climber is another qualified climber, equipped with the correct apparatus, training and preparation.

When designing your rescue plans and procedures, you must be sure that you understand the location and nature of the structures being climbed. In your plans, you must also confirm the availability of response teams and their response times to your structures. Because tower sites often do not have street addresses, you may want to provide a description of the location that the 911 center can enter into its dispatch database.

There are a lot of pieces of rescue equipment available today. There are self-retracting lanyards with hand cranks to "reel in" the fallen climber. There are systems to rescue skiers from gondolas and chairlifts that can be adapted, and there are manlift systems, both manual and assisted. Remember that some solutions require technicians to implement, and the nature of tower work often limits the size of a crew to two or three total members.

Conclusion

The effort to select the correct equipment and to develop rescue technique is much more difficult than the fall-protection project. Because of the wide array of answers to this problem, OSHA is flexible. The objective of a timely and safe retrieval is to get the climber to safety. Investigate equipment suppliers and challenge their answers in terms of your specific needs. You may need to incorporate several rescue tools and techniques in your program to ensure that you, your employees and your contractors are protected from this hostile environment. Talk to other climbers, associations and companies sharing the problem. Experiment, test and confirm that your climbers can and will be rescued and returned to safety.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